

Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in this application.

Listing of Claims:

1-20. (Cancelled)

21. (Currently Amended) A process for immobilizing wastes comprising:

contacting an immobilizing mineral with a solution containing a waste having one or more of radionuclides, hazardous elements, and hazardous components, resulting in a waste integrated immobilizing mineral, wherein the immobilizing mineral is selected from the group consisting of loparite, apatite, sphe, plagioclase feldspar, sodalite, nepheline, thorite, zircon, monazite, and calcium-zeolite; and

heating the waste integrated immobilizing mineral to transform the waste integrated immobilizing mineral from a less stable mineral to a more stable mineral, wherein said transformation produces a waste integrated mineral.

22. (Currently Amended) The process of claim 21, further comprising activating the immobilizing mineral, prior to said contacting step, by enhancing the capability of the immobilizing mineral to integrate with one or more of the radionuclides, hazardous elements, and hazardous compounds in the waste.

23. (Currently Amended) The process of claim 22, wherein the step of activating ~~enhancing~~ involves a treatment selected from the group consisting with one of acid, base and heat.

24. (Currently Amended) The process of claim 21, wherein the heating of the waste integrated immobilizing mineral forms a waste product having a waste integrated mineral encapsulated by a surrounding matrix.

25. (Previously presented) The process of claim 24, further comprising burying the waste product within an indigenous rock, wherein the indigenous rock and the surrounding matrix comprise at least one common component.

26. (Currently Amended) A process for immobilizing solid wastes comprising:
heating a solid waste having one or more of radionuclides, hazardous elements, and hazardous compounds with components of an immobilizing mineral at an elevated temperature whereby a solid state reaction occurs between the solid waste and the components of an immobilizing mineral; and

cooling to result in crystallization ~~of the mixture~~ into one or more reacted crystals that is integrated with the one or more of radionuclides, hazardous elements, and hazardous compounds.

27. (Previously presented) The process of claim 26, further comprising mixing the solid waste with the components of an immobilizing mineral before or during the heating step.

28. (Currently Amended) A process for immobilizing wastes comprising:
adding to a mixture of a waste and an immobilizing mineral ~~with one of rock and glass~~
rock or glass that has components of the immobilizing mineral, wherein the waste includes one or more of radionuclides, hazardous elements, and hazardous components;

heating the mixture to a temperature that is above melting point of the ~~rock or glass~~ ~~one of rock and glass~~ but below the melting point of the immobilizing mineral, to form a waste integrated mineral; and

cooling the mixture to result in formation of an effective covering of the waste integrated mineral and formation of a surrounding rock or glass matrix.

29. (New) A process for immobilizing wastes comprising:
activating an immobilizing mineral by treatment with acid, base, or heat;
contacting the activated immobilizing mineral with a solution containing a waste having one or more of radionuclides, hazardous elements, and hazardous components, resulting in a waste integrated immobilizing mineral; and

heating the waste integrated immobilizing mineral to transform the waste integrated immobilizing mineral to a more stable mineral.

Serial No.: 10/606,218
Art Unit: 2682

Attorney's Docket No.: GRI-101-CON (520763-0000001)
Page 6

30. (New) The process of claim 29, wherein the heating of the waste integrated immobilizing mineral forms a waste product having a waste integrated mineral encapsulated by a surrounding matrix.